CLAIMS

1. A linear motor glide apparatus, comprising:

a unitary bearing rail structure providing a surface for disposing thereon an array of magnets, the bearing rail structure exhibiting bearing rail surfaces for receiving bearings to roll against the surfaces;

bearing block assemblies comprising bearings position-able to roll against the bearing rail surfaces of the bearing rail structure; and

one or more connecting structures adapted to affix a linear motor coil assembly thereto and to which a plurality of the bearing block assemblies are mounted.

2. The apparatus of claim 1, wherein one or more of the connecting structures conducts heat away from the linear motor coil assembly.
3. The apparatus of claim 1, wherein one or more of the connecting structures exhibits, for a specified temperature range, a coefficient of thermal expansion that is substantially less than a coefficient of thermal expansion of a material which the linear motor coil assembly is comprised for the specified temperature range.
4. The apparatus of claim 3, wherein the one or more connecting structures is mounted to a bearing block assembly by bolts inserted into bolt holes with a radial clearance sufficient to enable adjustment of a position of a bearing of the bearing block assembly relative to a bearing rail surface exhibited by the bearing rail structure.
5. The apparatus of claim 1, wherein a connecting structure exhibits, for a specified temperature range, a linear coefficient of thermal expansion that is substantially

less than a linear coefficient of thermal expansion of aluminum for the specified temperature range.

6. The apparatus of claim 5, wherein a connecting structure is mounted to a bearing block assembly by bolts inserted into bolt holes with a radial clearance sufficient to enable adjustment of a position of a bearing of the bearing block assembly relative to a bearing rail surface exhibited by the bearing rail structure.
7. The apparatus of claim 1, wherein a mechanism for mounting the linear motor coil assembly to a connecting structure enables the linear motor to exhibit an amount of thermal expansion, for a specified temperature increase, that substantially exceeds an amount of thermal expansion exhibited by the connecting structure for the specified temperature increase.
8. The apparatus of claim 1, wherein the bearing rail structure further comprises position indicator marks enabling detection by sensors of a position of the linear motor assembly.
9. A method for constructing a linear motor assembly, comprising the steps of:

providing a unitary bearing rail structure that exhibits a surface for disposing thereon an array of magnets, the bearing rail structure exhibiting bearing rail surfaces for receiving bearings to roll against the surfaces;

providing bearing block assemblies comprising bearings position-able to roll against the bearing rail surfaces of the bearing rail structure; and

providing one or more connecting structures adapted to affix a linear motor coil assembly thereto and to which a plurality of the bearing block assemblies are mounted.

10. The method of claim 9, wherein one or more of the connecting structures conducts heat away from the linear motor coil assembly.

11. The method of claim 9, wherein one or more of the connecting structures exhibits, for a specified temperature range, a coefficient of thermal expansion that is substantially less than a coefficient of thermal expansion of a material which the linear motor coil assembly is comprised for the specified temperature range.

12. The method of claim 11, wherein the one or more connecting structures is mounted to a bearing block assembly by bolts inserted into bolt holes with a radial clearance sufficient to enable adjustment of a position of a bearing of the bearing block assembly relative to a bearing rail surface exhibited by the bearing rail structure.

13. The method of claim 9, wherein a connecting structure exhibits, for a specified temperature range, a linear coefficient of thermal expansion that is substantially less than a linear coefficient of thermal expansion of aluminum for the specified temperature range.

14. The method of claim 13, wherein a connecting structure is mounted to a bearing block assembly by bolts inserted into bolt holes with a radial clearance sufficient to enable adjustment of a position of a bearing of the bearing block assembly relative to a bearing rail surface exhibited by the bearing rail structure.

15. The method of claim 9, wherein a mechanism for mounting the linear motor coil assembly to a connecting structure enables the linear motor to exhibit an amount of thermal expansion, for a specified temperature increase, that substantially

exceeds an amount of thermal expansion exhibited by the connecting structure for the specified temperature increase.

16. The method of claim 9, further comprising the step of providing an anti-cogging mechanism for reducing a cogging force exhibited by the linear motor.

17. The method of claim 16, wherein the anti-cogging mechanism comprises a coil wrapped about an iron core, and wherein a current calculated to reduce the cogging force is applied to the coil.

18. A method for reducing a cogging force exhibited by a linear motor, comprising the steps of:

providing a core element with windings;

positioning said core element to create a force acting in opposition to the cogging force.

19. The apparatus of claim 18, wherein a current calculated to reduce the cogging force is applied to the windings of the core element.

20. The method of claim 18, comprising the steps of:

providing a unitary bearing rail structure that exhibits a surface for disposing thereon an array of magnets, the bearing rail structure exhibiting bearing rail surfaces for receiving bearings to roll against the surfaces;

providing bearing block assemblies comprising bearings position-able to roll against the bearing rail surfaces of the bearing rail structure; and

providing one or more thermal compensating connecting structures to which a plurality of the bearing block assemblies are mounted.